Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)	
	)	
Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band	)	GN Docket No. 12-354

REPLY COMMENTS OF HARRIS CORPORATION

Harris Corporation ("Harris") respectfully submits these reply comments in response to the Federal Communications Commission's ("Commission") Notice of Proposed Rulemaking and Order to amend the agency's rules with regard to commercial operations in the 3550-3650 MHz band.[1]

I. SUMMARY.

The Comments in this proceeding make clear that protection of vital incumbent operations must be the preeminent driver of any policy changes to the 3550-3650 MHz band rules. Commenters embrace Harris' position that grandfathering provisions must be established to ensure that mission critical satellite services are protected, and support the policy of grandfathering pre-existing FSS facilities.

Additionally, several stakeholders agree with Harris that Priority Access should be extended to safety-of-life applications and facilities that support "mission critical" uses both in

[1] *See* In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Notice of Proposed Rulemaking and Order*, FCC 12-148, GN Docket No. 12-354 (rel. Dec. 12, 2012) ("3.5 GHz NPRM").

the 3.5 GHz Band and the 3650-3700 MHz band. Further, strict out-of-band emissions provisions and a 40 dB power limit for Citizen Broadband Service (CBS) devices was shown to be essential for protection of vital satellite services. Moreover, a single-provider-based interference protection structure will maximize efficiency in spectrum management and provide the greatest protection against interference threats.

Given the strength of the record and the diverse array of commenters supporting these provisions, Harris urges the adoption of each of these proporals as a part of any overall restructuring of rules for the 3550-3650 MHz band.

II. THE RECORD SUPPORTS THE COMMISSION EXTENDING THE INCUMBENT TIER AND GRANDFATHERING ESSENTIAL C-BAND TELEPORT FACILITIES.

In its initial comments, Harris noted its support for the Commission's plans to establish incumbency for non-federal FSS earth stations operating in the 3600-3650 MHz band.[2] Grandfathering these earth stations will ensure that they are protected from harmful interference generated by CBS users in the Priority and General Authorized Access (GAA) tiers. In recommending inclusion of the 3650-3700 MHz band in the proposed regulatory regime, Harris encouraged the Commission to extend the incumbency and grandfathering provisions contemplated for the 3550-3650 MHz band to pre-existing operations in the lower C-Band. Preserving these incumbent users' access to spectrum that is otherwise free of interference will ensure the continuation of important public safety communications services.[3]

[2] Harris Comments at 3.

[3] *See* Harris Comments at 3-4 (asserting that incumbent teleport facilities operating in the extended C-Band provide reliable and critical communications to the upstream energy industry and that exposure to out-of-band interference could disrupt facility performance creating serious safety risks to the personnel at the facility and the public).

Two other commenters make clear that the introduction of other services into the 3.5 GHz Band, like small cells, could have a negative impact on incumbent FSS users that are not afforded Incumbent Tier protection. Astrium Services Government, which uses the 3600-3700 MHz band to operate two teleport facilities that provide feeder links for Inmarsat's L-Band MSS satellites, clearly established that protection for incumbent and future FSS earth stations from harmful interference caused by small cells is "crucial."[4] Concurrently, the Satellite Industry Association asserted that services in the extended C-Band, operating in frequencies at issue in this proceeding, provide "end-to-end communications solutions to military, commercial and government customers" both in the United States and abroad.[5] SIA argued that these "critical services" must be protected should the Commission consider permitting small cell deployment.[6] Harris has analogous concerns based on its operation of teleport facilities in the extended C-Band that provide critical communications for the energy industry in the Houston area.

In its comments, the Wireless Internet Service Providers Association argued that existing locations registered in the 3650-3700 MHz band should be subject to the Commission's grandfathering provisions and accorded Priority Access in the three-tiered framework.[7] Harris contends that this proposal does not go far enough in extending interference protection to facilities that support industries critical to the public interest, like Harris' teleport facilities. In

[4] Astrium Services Government, Inc. Comments at 1 (explaining that the two teleport facilities it operates provide feeder links that enable safety-of-life and homeland security services for commercial, government, and military users and that interference from small cells could disrupt these critical services).

[5] Satellite Industry Association Comments at 12.

[6] *Id.* at 10 (justifying the protection of satellite services in the 3.5 GHz Band from commercial users by demonstrating that networks operating in the 3500-3700 MHz bands currently provide for safety-of-life functions that meet the demands of military, commercial and government customers).

[7] *See* Wireless Internet Service Providers Association Comments at 11 (stating that pre-existing 3650-3700 MHz users "should not face the prospect of harmful interference from subsequent GAA users" and that interference could arise before the Universal Licensing System is transitioned to the SAS).

fact, to effectuate this policy, the Commission must extend incumbency and grandfathering provisions for pre-existing FSS facilities operating in the lower C-Band; this will ensure that the Commission's plan to allow small cell deployment in the Band does not seriously disrupt these important telecommunications services. Furthermore, it will protect the substantial investment that many companies have made in vital FSS services.

III. THE COMMISSION SHOULD GIVE PRIORITY ACCESS TO VITAL SATELLITE COMMUNICATIONS SYSTEMS IN THE C-BAND THAT PROVIDE SAFETY-OF-LIFE APPLICATIONS.

Several commenters concur with Harris' position that Priority Access should be extended to safety-of-life applications and facilities that support "mission critical" uses both in the 3.5 GHz Band and the 3650-3700 MHz band.[8]

Harris agrees with the proposal of the Wireless Innovation Forum, recommending the implementation of a Priority Access Tier to ensure that critical safety-of-life applications be given this level of priority.[9] Both Motorola Solutions and the Utilities Telecom Council (UTC) similarly asserted that public safety operations, utilities, other critical infrastructure, hospitals, and state and local governments should be eligible for the Priority Tier.[10] UTC also agreed with the Commission's assertion that eligibility in the Priority Access Tier could include "other users

[8] Harris Comments at 5-6 (recommending that the Commission extend Priority Access eligibility to facilities that support "mission critical" uses in order to ensure these telecommunications services are protected from harmful interference caused by General Authorized Access users).

[9] *See* Wireless Innovation Forum Comments at 4.

[10] *See* Motorola Solutions Comments at 3 (arguing that public safety operations require pre-emption capability on a near real-time basis and that critical infrastructure facilities would benefit from the additional wireless networking capabilities that the Priority Access Tier would provide); *see also* Utilities Telecom Council Comments at 12-13 (supporting the Commission's suggested list of Priority Access services and finding that the above-mentioned class of Priority Access facilities would be viable without jeopardizing quality of service).

with a distinct need for reliable, prioritized access to broadband spectrum at specific, localized facilities."[11]

Similarly, Rajant Communications encouraged the Commission to allow existing licensees serving critical infrastructure in the 3650-3700 MHz band to apply for Priority Access in the SAS database rather than re-classify and assign these users to the GAA Tier.[12] If the Commission includes this band in its proposed regulatory regime, as it proposes in its supplemental proposal,[13] the tiering rules must be equally applied across the 150 MHz of continguous spectrum and "mission critical" services like those offered by Harris and Rajant should be afforded Priority Access.

Based upon the record, the Commission should embrace this broad support for including incumbent communications systems providing vital services in the Priority Access Tier as it finalizes its new rules.

IV. THE RECORD MAKES CLEAR THE NEED TO RECONSIDER TECHNICAL SPECIFICATIONS THAT COULD IMPACT INCUMBENT USERS IN ADJACENT SPECTRUM.

In its initial comments, Harris proposed two rules: 1) a strict, out-of-band emissions (OOBE) management policy for transmissions originating in the 3.5 GHz Band; and 2) a 40 dB power limit for CBS devices that will be necessary to preserve the performance of pre-existing communications services in adjacent bands under the CBS framework.[14] Harris' concerns about the harmful impact of OOBE on incumbent services in the C-Band were mirrored by other

[11] Utilities Telecom Council Comments at 13 (quoting the 3.5 GHz NPRM at ¶ 9).

[12] *See* Rajant Communications Comments at 2-3 (contending that system providers working with critical infrastructure, like rail and energy, require uninterrupted spectrum access to deliver services and recommending that the Commission allow these providers to seek certification in order to obtain Priority Access).

[13] *See* 3.5 GHz NPRM at ¶¶ 77-82 (Supplemental Proposal to Include the 3650-3700 MHz Band).

[14] Harris Comments at 8.

commenters offering similar facilities and services primarily in this band. The Telecommunications Industry Association (TIA) maintained in its comments that General Authorized Access in the form of small cell deployment or mobile use may be "impractical" with the Department of Defense and FSS incumbents already occupying the spectrum.[15] In addition, TIA noted in particular that the deployment and use of small cell technology could be "adverse" to grandfathered C-Band FSS receive earth stations and other incumbent services.[16]

With this concern elevated, Harris reiterates its contention that the 40 dB power limit for CBS devices should provide sufficient OOBE protection for incumbent users. While the Utilities Telecom Council argues that applying the current power limit standard of 43+ 10log P dB to operations in the 3.5 GHz Band will adequately protect against adjacent channel interference in the 3.65 GHz Band,[17] this assertion does not take into consideration the physical characteristics of the C-Band. Specifically, the adverse impact that OOBE can have on FSS earth stations receive performance necessitates the proposed 40dB limit. Harris also suggests that, prior to finalizing its rules, the Commission conduct extensive testing to ensure incumbents are protected from harmful interference, an approach advocated in its comments by the National Cable & Telecommunications Association.[18] Given the many concerns about the impact of OOBE upon pre-existing services in adjacent bands, Harris recommends the Commission carefully consider the effect commercial deployment may have on incumbents above and below the 3.5 GHz Band and implement the 40 dB limit.

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[15] Telecommunications Industry Association Comments at 2.

[16] *Id.*

[17] *See* Utilities Telecom Council Comments at 24.

[18] *See* National Cable & Telecommunications Association Comments at 4-6 (proposing additional testing to ensure that their members' C-Band satellite services remain free of harmful interference); *see also* National Association of Broadcasters Comments at 3 (noting that broadcast programming is distributed through C-Band services and encouraging the Commission to take steps to protect incumbents from harmful emissions).

V. COMMENTERS MAKE CLEAR THAT THE COMMISSION MUST CLEARLY DEFINE THE CITIZEN BROADBAND SERVICE MODULATION SCHEME TO ENSURE TIER FLEXIBILITY.

In its comments, Harris supported the Commission's proposal to create a Spectrum Access System (SAS) to identify incumbent users entitled to interference protection[19] and recommended that the Commission concentrate the maintenance of this database in one provider.[20] Harris concurs with the approach advocated separately by Comsearch[21] and PCIA,[22] who both recommend that the SAS be operated by a federally-designated manager from the private sector. Given the interplay between incumbent and commercial users, as well as the threat of incompatibility based on interference, this task will require automated management of the spectrum resources. The private sector, in partnership with federal users of the band, is best positioned to serve this management function. Harris also finds merit in Spectrum Bridge's suggestion that SAS management candidates offer "compelling credentials and proposals" in order to become a federally-designated manager of the database.[23]

In terms of developing safeguards that protect Incumbent and Priority Access users, CTVR's comments exemplify a modulation scheme that is highly defined and increases the chances of band interoperability. CTVR suggests that the SAS should employ a Least

[19] *See* Harris Comments at 9.

[20] *See id.*

[21] *See* Comsearch Comments at 10 (referring to a proposal contained in the report "Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth" by the President's Council of Advisors on Science and Technology).

[22] *See* PCIA Comments at 6 (arguing that the private sectors ability to drive innovative solutions and increased efficiencies make it best suited to administer SAS database management).

[23] Spectrum Bridge Comments at 11 (noting that database providers "contribute significantly to collaboration and ensure a healthy competitive landscape" and suggesting that a consequence of not properly vetting candidates for the position of database manager includes diminished "return on investment" for commercial enterprises that currently offer services in the Band).

Restrictive Mask assignment mechanism that adapts power restrictions based on observed scenarios registered in the system.[24] Harris argues that adoption of this scheme would lead to a well regulated operational regime in which operators could develop truly interoperable hardware.

[24] *See* CTVR Comments at 1 (suggesting that dynamically assigned least restrictive masks will maximize spectral efficiency for small cells on a scenario-by-scenario basis which will have the effect of mitigating interference risk between Priority Access and GAA systems).

VI. CONCLUSION.

For the foregoing reasons, Harris urges the Commission to adopt its recommendations as it considers amending rules pursuant to this proceeding.

Respectfully submitted,

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